WHAT IS CLAIMED IS:

1. An optical recording apparatus, comprising:

a light source which emits a light beam;

a scanning mechanism configured to reform the light beam emitted by the light source into a cyclic scanning light beam which scans in a main scanning direction a photosensitive surface moving in a sub-scanning direction; and

a phase shift controlling mechanism configured to perform an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one, and the pixel clock signals being used for a control of the light source to turn the light beam on and off in accordance with image data.

2. The optical recording apparatus according to Claim 1, further comprising:

a detecting mechanism configured to detect the cyclic scanning light beam reformed by the scanning mechanism at two detecting positions on the photosensitive surface; and

a time measuring mechanism configured to measure a time difference between two detection times the detecting mechanism detects the cyclic scanning light beams at the two detecting positions,

wherein the phase shift controlling mechanism performs the image magnification correction based on the time difference measured by the time measuring mechanism.

3. An optical recording apparatus for use in a color image forming apparatus, comprising:

a light source which sequentially emits a plurality of light beams corresponding to basic color elements of a full color image;

a scanning mechanism configured to independently reform the plurality of light beams emitted by the light source into respective cyclic scanning light beams to sequentially scan in a main scanning direction a photosensitive surface moving in a sub-scanning direction; and

a phase shift controlling mechanism configured to perform an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one, and the pixel clock signals being used for a control of the light source to turn on and off each of the cyclic scanning light beams in accordance with each of the basic color elements of the full color image.

4. An optical recording apparatus according to Claim 3, wherein the phase shift controlling mechanism performs the image magnification correction based on a signal representing an image deviation in the main scanning direction transmitted from the image forming apparatus.

5. The optical recording apparatus according to Claim 3, further comprising:

a detecting mechanism configured to perform a beam detection for independently detecting the respective cyclic scanning light beams reformed into by the scanning mechanism at two detecting positions on the photosensitive surface; and

a time measuring mechanism configured to perform a time measurement for measuring for each of the respective cyclic scanning light beams a time difference between detection results at the two detecting positions by the detecting mechanism,

wherein the phase shift controlling mechanism performs the image magnification correction based on the time difference measured by the time measuring mechanism.

6. The optical recording apparatus according to Claim 3, wherein the phase shift controlling mechanism performs the image magnification correction based on the time

difference measured by the time measuring mechanism and a signal representing an image deviation in the main scanning direction transmitted from the image forming apparatus.

7. The optical recording apparatus according to Claim 3, further comprising:

a pixel clock frequency controlling mechanism configured to change a frequency of the pixel clock signals in steps of a predetermined frequency value to perform the image magnification correction in collaboration with the phase shift controlling mechanism.

8. The optical recording apparatus according to Claim 7, wherein the phase shift controlling mechanism performs a portion of the image magnification correction smaller than the predetermined frequency value.

9. The optical recording apparatus according to Claim 3, wherein the scanning mechanism comprises at least one light deflecting mechanism, each comprising a plurality of light deflecting surfaces configured to move to deflect each one of the plurality of light beams emitted by the light source to reform it into corresponding one of the respective cyclic scanning light beams, and the detecting mechanism performs the beam detection per each of the plurality of light deflecting surfaces and the time measuring mechanism performs the time measurement per each of the plurality of light deflecting surfaces, and the phase shift controlling mechanism performs the image magnification correction based on the time measurement performed per each of the plurality of light deflecting surfaces by the time measuring mechanism.

10. The optical recording apparatus according to Claim 9, wherein the beam detection by the detecting mechanism and the time measurement by the time measuring mechanism are carried out when the plurality of light deflecting surfaces is restarted after being stopped from moving or changed to move at a different moving rate.

11. The optical recording apparatus according to Claim 9, wherein the beam detection

by the detecting mechanism and the time measurement by the time measuring mechanism are carried out when the light source is again activated after being inactivated and emitting no light beam.

12. The optical recording apparatus according to Claim 9, wherein a time measurement on a specific light deflecting surface out of the plurality of light deflecting surfaces performed by the time measuring mechanism is regarded as a reference time measurement, and the phase shift controlling mechanism performs the image magnification correction with respect to each one of other light deflecting surfaces than the specific light deflecting surface out of the plurality of light deflecting surfaces based on a difference of a corresponding time measurement from the reference time measurement.

13. The optical recording apparatus according to Claim 9, wherein the time measurement and the image magnification correction are performed in a cyclic manner by the time measuring mechanism and the phase shift controlling mechanism, respectively, during one of an image forming process and when the plurality of light deflecting surfaces are moving in a steady state to emit the plurality of light beams.

14. The optical recording apparatus according to Claim 13, wherein a cycle of the time measurement performed by the time measuring mechanism is changeable.

15. The optical recording apparatus according to Claim 9, wherein one of the two detecting positions for the detecting mechanism is located close to a starting edge of an effective image area and a different one of the two detecting positions is located close to an ending edge of the two ends of the effective image area.

16. An image forming apparatus, comprising:

a photosensitive member having a photosensitive surface movable in a sub-scanning direction;

an optical recorder which comprises:

a light source which emits a light beam;

a scanner configured to reform the light beam emitted by the light source into a cyclic scanning light beam which scans in a main scanning direction the photosensitive surface moving in the sub-scanning direction; and

a phase shift controller configured to perform an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one, and the pixel clock signals being used for a control of the light source to turn the light beam on and off in accordance with image data, and

an image forming controller configured to determine the positions, at which the phase change is performed by the phase shift controller, randomly or evenly within an effective image area.

17. The image forming apparatus according to Claim 16, wherein the optical recorder further comprising:

a detecting mechanism configured to detect the cyclic scanning light beam reformed by the scanning mechanism at two detecting positions on the photosensitive surface; and

a time measuring mechanism configured to measure a time difference between two detection times the detecting mechanism detects the cyclic scanning light beams at the two detecting positions,

wherein the phase shift controlling mechanism performs the image magnification correction based on the time difference measured by the time measuring mechanism, and

wherein the image forming controller determines the positions, at which the phase

change is performed by the phase shift controller, randomly or evenly within an area between the two detecting positions.

18. An image forming apparatus, comprising:

a photosensitive member having a photosensitive surface movable in a sub-scanning direction;

an optical recorder which comprises:

a light source which sequentially emits a plurality of light beams corresponding to basic color elements of a full color image;

a scanner configured to independently reform the plurality of light beams emitted by the light source into respective cyclic scanning light beams to sequentially scan in a main scanning direction the photosensitive surface moving in the sub-scanning direction;

a phase shift controller configured to perform an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one, and the pixel clock signals being used for a control of the light source to turn on and off each of the cyclic scanning light beams in accordance with each of the basic color elements of the full color image, and

an image forming controller configured to determine the positions, at which the phase change is performed by the phase shift controller, randomly or evenly within an effective image area.

19. An image forming apparatus according to Claim 18, wherein the optical recorder further comprises:

a beam detector configured to perform a beam detection for independently detecting the respective cyclic scanning light beams reformed into by the scanner at two beam-detecting

positions on the photosensitive surface; and

a time measuring mechanism configured to perform a time measurement for measuring for each of the respective cyclic scanning light beams a time difference between detection results at the two beam-detecting positions by the beam detector,

wherein the phase shift controller performs the image magnification correction based on the time difference measured by the time measuring mechanism, and

wherein the image forming controller determines the positions, at which the phase change is performed by the phase shift controller, randomly or evenly within an area between the two beam-detecting positions.

20. An image forming apparatus according to Claim 19, further comprising:

a test pattern detector configured to perform a test pattern detection for detecting at two or more pattern-detecting positions a test color pattern formed with the optical recorder and to generate a signal representing an image deviation in the main scanning direction,

wherein the phase shift controller performs the image magnification correction based on the signal transmitted from the test pattern detector.

21. The image forming apparatus according to Claim 20, wherein the image forming controller performs a position determination for determining the positions, at which the phase change is performed by the phase shift controller, randomly or evenly within an area between the two beam-detecting positions when the phase shift controller performs the image magnification correction based on the time difference measured by the time measuring mechanism and within an area between the pattern-detecting positions when the phase shift controller performs the image magnification correction based on the signal transmitted from the test pattern detector.

22. The image forming apparatus according to Claim 21, wherein the image forming

controller changes the position determination per scanning line to be not aligned in the sub-scanning line.

23. The image forming apparatus according to Claim 18, wherein the phase shift controller performs the phase change to carry out an image position correction outside the effective image area and the image magnification correction within the effective image area, and the image forming controller recognizes the effective image area, determines an image forming area including the effective image area in the main scanning direction, and divides the image forming area into a first area in which the phase change is performed for the image position correction and a second area in which the phase change is performed for the image magnification correction.

24. The image forming apparatus according to Claim 23, wherein the first area is an area outside the effective image area and for starting an image recording performed by the optical recorder.

25. The image forming apparatus according to Claim 24, wherein the phase shift controller continuously performs the phase change when changing on a plurality of pixel clock signals.

26. The image forming apparatus according to Claim 23, wherein the image forming controller divides the second area into a plurality of sub-division areas, and the phase shift controller performs the image magnification correction by the phase change in each of the plurality of sub-division areas independently.

27. The image forming apparatus according to Claim 26, wherein the image forming controller changes a width of each of the plurality of sub-division areas while maintaining an entire width of the second area.

28. The image forming apparatus according to Claim 26, wherein widths of the

plurality of the sub-division areas are equal to each other.

29. The image forming apparatus according to Claim 26, wherein the image forming controller changes a number of the sub-division areas.

30. The image forming apparatus according to Claim 26,

wherein the image forming controller changes one of widths of the plurality of sub-division areas and a number of sub-division areas of the second area according to a characteristic of the image magnification pertinent to the optical recorder.

31. The image forming apparatus according to Claim 23, wherein the image forming controller performs a position determination for determining the positions, at which the phase change is performed by the phase shift controller, randomly or evenly within the second area.

32. The image forming apparatus according to Claim 31, wherein the image forming controller changes the position determination per scanning line to be not aligned in the sub-scanning line.

33. An optical recording method, comprising the steps of:

generating a pixel clock signal;

emitting a light beam in accordance with image data in steps of pixel clock signal;

reforming the light beam into a cyclic scanning light beam which scans in a main scanning direction a photosensitive surface moving in a sub-scanning direction; and

performing an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one.

34. The method according to Claim 33, further comprising:

detecting the cyclic scanning light beam at two detecting positions on the

photosensitive surface; and

measuring a time difference between two detection times the detecting step detects the cyclic scanning light beams at the two detecting positions,

wherein the performing step performs the image magnification correction based on the time difference measured by the measuring step.

35. An optical recording method for use in a color image forming apparatus, comprising the steps of:

generating a pixel clock signal;

emitting sequentially a plurality of light beams with a scanning mechanism in accordance with basic color elements of a full color image in steps of the pixel clock signal;

reforming the plurality of light beams independently into respective cyclic scanning light beams to sequentially scan in a main scanning direction a photosensitive surface of the image forming apparatus moving in a sub-scanning direction; and

performing an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one.

36. The method according to Claim 35, wherein the performing step performs the image magnification correction based on a signal representing an image deviation in the main scanning direction transmitted from the image forming apparatus.

37. The method according to Claim 35, further comprising the steps of:

executing a beam detection for independently detecting the respective cyclic scanning light beams at two detecting positions on the photosensitive surface; and

carrying out a time measurement for measuring for each of the respective cyclic

scanning light beams a time difference between detection results at the two detecting positions,

wherein the performing step performs the image magnification correction based on the time difference measured by the carrying step.

38. The method according to Claim 35, wherein the performing step performs the image magnification correction based on the time difference measured by the carrying step and a signal representing an image deviation in the main scanning direction transmitted from the image forming apparatus.

39. The method according to Claim 35, further comprising the step of:

changing a frequency of the pixel clock signals in steps of a predetermined frequency value to perform the image magnification correction in collaboration with the phase change.

40. The method according to Claim 39, wherein the carrying step performs a portion of the image magnification correction smaller than the predetermined frequency value.

41. The method according to Claim 35, wherein the scanning mechanism comprises at least one light deflecting mechanisms, each comprising a plurality of light deflecting surfaces configured to move to deflect each one of the plurality of light beams emitted by the emitting step to reform it into corresponding one of the respective cyclic scanning light beams, and the executing step performs the beam detection per each of the plurality of light deflecting surfaces and the carrying step performs the time measurement per each of the plurality of light deflecting surfaces, and the performing step performs the image magnification correction based on the time measurement performed per each of the plurality of light deflecting surfaces by the carrying step.

42. An image forming method, comprising the steps of:

providing a photosensitive member having a photosensitive surface movable in a sub-

scanning direction;

generating a pixel clock signal;

emitting sequentially a plurality of light beams in accordance with basic color elements of a full color image in steps of the pixel clock signal;

reforming independently the plurality of light beams into respective cyclic scanning light beams to sequentially scan in a main scanning direction the photosensitive surface moving in the sub-scanning direction;

performing an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one; and

determining the positions, at which the phase change is performed by the performing step, randomly or evenly within an effective image area.

43. A method according to Claim 42, further comprising the steps of:

executing a beam detection for independently detecting the respective cyclic scanning light beams at two beam-detecting positions on the photosensitive surface; and

carrying out a time measurement for measuring for each of the respective cyclic scanning light beams a time difference between detection results at the two beam-detecting positions by the executing step,

wherein the performing step performs the image magnification correction based on the time difference measured by the carrying step, and

wherein the determining step determines the positions, at which the phase change is performed by the performing step, randomly or evenly within an area between the two beam-detecting positions.

44. A method according to Claim 43, further comprising the steps of:

conducting a test pattern detection for detecting at two or more pattern-detecting positions a test color pattern; and

outputting a signal representing an image deviation in the main scanning direction,

wherein the performing step performs the image magnification correction based on the signal transmitted by the outputting step.

45. The method according to Claim 44, wherein the determining step performs a position determination for determining the positions, at which the phase change is performed by the performing step, randomly or evenly within an area between the two beam-detecting positions when the performing step performs the image magnification correction based on the time difference measured by the carrying step and within an area between the pattern-detecting positions when the performing step performs the image magnification correction based on the signal transmitted by the conducting step.

46. The method according to Claim 45, wherein the determining step changes the position determination per scanning line to be not aligned in the sub-scanning line.

47. The method according to Claim 42, wherein the performing step performs the phase change to carry out an image position correction outside the effective image area and the image magnification correction within the effective image area, and the determining step recognizes the effective image area, determines an image forming area including the effective image area in the main scanning direction, and divides the image forming area into a first area in which the phase change is performed for the image position correction and a second area in which the phase change is performed for the image magnification correction.

48. An optical recording apparatus, comprising:

generating means for generating a light beam;

reforming means for reforming the light beam generated by the generating means into a cyclic scanning light beam which scans in a main scanning direction a photosensitive surface moving in a sub-scanning direction; and

correcting means for performing an image magnification correction by a phase change for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one, and the pixel clock signals being used for a control of the generating means to turn the light beam on and off in accordance with image data.

49. The optical recording apparatus according to Claim 1, further comprising:

detecting means for detecting the cyclic scanning light beam reformed by the reforming means at two detecting positions on the photosensitive surface; and

measuring means for measuring a time difference between two detection times the detecting means detects the cyclic scanning light beams at the two detecting positions,

wherein the correcting means performs the image magnification correction based on the time difference measured by the measuring means.

50. An optical recording apparatus for use in a color image forming apparatus, comprising:

generating means for sequentially generating a plurality of light beams corresponding to basic color elements of a full color image;

reforming means for independently reforming the plurality of light beams emitted by the generating means into respective cyclic scanning light beams to sequentially scan in a main scanning direction a photosensitive surface moving in a sub-scanning direction; and

correcting means for performing an image magnification correction by a phase change

for changing a phase of pixel clock signal in units of one nth of a cycle of the pixel clock signal at one or more positions on the photoconductive surface in the main scanning direction, n being an integer greater than one, and the pixel clock signals being used for a control of the generating means to turn on and off each of the cyclic scanning light beams in accordance with each of the basic color elements of the full color image.

51. An optical recording apparatus according to Claim 3, wherein the correcting means performs the image magnification correction based on a signal representing an image deviation in the main scanning direction transmitted from the image forming apparatus.

52. The optical recording apparatus according to Claim 3, further comprising:

executing means for executing a beam detection for independently detecting the respective cyclic scanning light beams reformed into by the reforming means at two detecting positions on the photosensitive surface; and

carrying means for carrying out a time measurement for measuring for each of the respective cyclic scanning light beams a time difference between detection results at the two detecting positions by the executing means,

wherein the correcting means performs the image magnification correction based on the time difference measured by the time carrying means.

53. The optical recording apparatus according to Claim 3, wherein the correcting means performs the image magnification correction based on the time difference measured by the carrying means and a signal representing an image deviation in the main scanning direction transmitted from the image forming apparatus.

54. The optical recording apparatus according to Claim 3, further comprising:

changing means for changing a frequency of the pixel clock signals in steps of a predetermined frequency value to perform the image magnification correction in

collaboration with the correcting means.

55. The optical recording apparatus according to Claim 7, wherein the correcting means performs a portion of the image magnification correction smaller than the predetermined frequency value.

56. The optical recording apparatus according to Claim 3, wherein the reforming means comprises at least one light deflecting means, each comprising a plurality of light deflecting surfaces configured to move to deflect each one of the plurality of light beams generated by the generating means to reform it into corresponding one of the respective cyclic scanning light beams, and the executing means performs the beam detection per each of the plurality of light deflecting surfaces and the carrying means performs the time measurement per each of the plurality of light deflecting surfaces, and the correcting means performs the image magnification correction based on the time measurement performed per each of the plurality of light deflecting surfaces by the carrying means.

57. The optical recording apparatus according to Claim 9, wherein the beam detection by the executing means and the time measurement by the carrying means are carried out when the plurality of light deflecting surfaces is restarted after being stopped to move or changed to move at a different moving rate.

58. The optical recording apparatus according to Claim 9, wherein the beam detection by the executing means and the time measurement by the carrying means are carried out when the light source is again activated after being inactivated and emitting no light beam.

59. The optical recording apparatus according to Claim 9, wherein a time measurement on a specific light deflecting surface out of the plurality of light deflecting surfaces performed by the carrying means is regarded as a reference time measurement, and the correcting means performs the image magnification correction with respect to each one of

other light deflecting surfaces than the specific light deflecting surface out of the plurality of light deflecting surfaces based on a difference of a corresponding time measurement from the reference time measurement.

60. The optical recording apparatus according to Claim 9, wherein the time measurement and the image magnification correction are performed in a cyclic manner by the carrying means and the correcting means, respectively, during one of times an image forming process and when the plurality of light deflecting surfaces are moving in a steady state to emit the plurality of light beams.

61. The optical recording apparatus according to Claim 13, wherein a cycle of the time measurement performed by the carrying means is changeable.

62. The optical recording apparatus according to Claim 9, wherein one of the two detecting positions for the executing means is located close to a starting edge of an effective image area and a different one of the two detecting positions is located close to an ending edge of the two ends of the effective image area.